Name: HW 157

*Mr. Tiénou-Gustafson & Mr. Bielmeier*

Geometry, Period 3

Due Date: Mon, 18 May 2015

**Geometry**

**CW & HW**



|  |  |
| --- | --- |
| **Objectives** | 4.2 Compare quadratic graphs in form y =ax2 + c with the parent quadratic function |

**Finding Vertex**

* 1. Graph
  2. Determine if you are looking for a minimum value (parabola opening upward… smiling) or maximum value (parabola opening downward… frowning)
  3. 2nd + TRACE (to get CALC)
  4. Choose option 3: minimum or 4: maximum
  5. Left bound? Move the cursor as close as you can to the vertex.

Use 🡨 arrows to move cursors left of the vertex. ENTER.

* 1. Right bound? Use 🡪 arrows to move cursors right of the vertex. ENTER.
  2. Guess? ENTER. This is your vertex: (\_\_\_\_, \_\_\_\_)

**Intro to Vertical Transformations**

1. Press Y=. Enter the **parent quadratic function** in the Y1row:. Graph this “**parent graph**.”

* Does this function have a minimum or a maximum? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What is the vertex? \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Keep the parent function in the Y1 row. In the Y2row of your calculator: + 1.

* What is the vertex of the new graph? \_\_\_\_\_\_\_\_\_\_\_\_\_
* Describe what happened to the parabola from the parent graph to the new graph :

1. Keep the parent function in the Y1 row. Change the Y2row of your calculator: - 2.

* What is the vertex of the new graph? \_\_\_\_\_\_\_\_\_\_\_\_\_
* Describe what happened to the parent graph:

**Types of Quadratic Transformations ()**

|  |  |
| --- | --- |
| **Transformation: Shift \_\_\_\_\_\_\_\_ when**  1) Change the second graph:  2) Sketch the transformation: | **Transformation: Shift \_\_\_\_\_\_\_\_ when**  1)Change the second graph:  2) Sketch the transformation: |

|  |  |
| --- | --- |
| 1. Which describes the correct transformation from the parent graph to   A. shift down 3 units (negative y direction)  B. shift up 3 units (positive y direction)  C. shift left 3 units (negative x direction)  D. shift right 3 units (positive x direction) | 1. How would the graph of the function y = x2 + 4 be affected if the function were changed to y = x2 – 3?   A. The graph would shift 4 units up.  B. The graph would shift 3 units down.  C. The graph would shift 7 units down.  D. The graph would shift 1 unit down. |

1. **Predict**: what would be the transformation be from to . (Notice: the only change is in the “c” value.) **Prediction:** 
   * Now test your prediction! Graph both (in the Y1 line and then the Y2 line). Find the vertex of each. (Hint: you can switch between the graphs of the two lines using your up & down arrow.)
   * Y1 vertex: \_\_\_\_\_\_\_\_\_\_\_ Y2 vertex:\_\_\_\_\_\_\_\_\_\_ Does this prove your prediction right? Why or why not?

***So… I heard there’s a quiz on Monday. What do I need to be able to do?***

1. Find the solution to a quadratic three different ways: **8**

|  |  |  |
| --- | --- | --- |
| **1. Factoring when y = 0**  - Use your method of choice to find binomial factors & the solution set. | **2. Table**  - Find the x value(s) where y=0 (using 2nd graph fuction) | **3. Graphing**  - Make a graph. Circle the 2 x-intercepts & find the values. |
| |  |  | | --- | --- | | x2 |  | |  | – 8 |   *Hint: You need factors of 8 that have a sum of 2 when one is positive & one is negative.*  **Factors: ( x - )( x + ) = 0**  **Solution set: x =** | |  |  | | --- | --- | | X | Y | | -4 |  | | -2 |  | | 0 |  | | 2 |  | | 4 |  |   **Circle the2 solutions.**  *Hint: solutions are when y=0* | **http://www.crestviewlocal.k12.oh.us/chs/staff/mcc/images/coordinate%20plane%2010x10.bmp**  *Hint: hit 2nd + trace, chose 2:zeros, and hit enter after going left from the intercept, right, and guess. You’ll have to do this once for the left & once for the right intercept.* |

1. Use your graphing calculator to do the following: Practice with **4**
   1. Determine if the graph opens upward (max) or downward (min):
   2. Find the solutions (*2nd + trace, chose 2:zeros*):
   3. Find the vertex(*2nd + trace, chose 3 or 4*): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Label as min or max:
   4. Sketch a graph that is contains these three points:
2. Describe transformations:
   1. How would the parent graph (y = x2 ) be affected if the function changed to y = x2 - 2?

**Shift up/down** (circle one) **by \_\_\_\_\_\_\_\_\_\_\_\_\_**

* 1. How would the graph of y = x2 +3x -2 change if the function were changed to y = x2 +3x+ 1?

Shift…